R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

ALLOWABLE SUBJECT MATTER

The Examiner's allowance of claims 19, 20 and 23 and the Examiner's indication of the allowability of the subject matter of claim 3 is respectfully acknowledged.

Claim 3 has not been rewritten in independent form at this time since, as set forth in detail hereinbelow, it is respectfully submitted its parent claim 1, as amended, now also recites allowable subject matter.

THE SPECIFICATION

The specification has been amended to correct some minor informalities of which the undersigned has become aware, including all of the informalities pointed out by the Examiner.

No new matter has been added, and it is respectfully requested that the amendments to the specification be approved and entered, and that the objection to the specification be withdrawn.

THE DRAWINGS

FIG. 10 has been renumbered as FIG. 11, and FIGS. 11(a), 11(b) and 11(c) have been renumbered as FIGS. 10(a), 10(b) and 10(c), as described hereinabove.

"LUTB" in renumbered FIG. 10(a) has not been changed to "LUTA," and "LUTA" in renumbered FIG. 10(b) has not been changed to "LUTB," as required by the Examiner. Rather, the identification of LUTB and LUTA in the specification has been amended to better accord with renumbered FIGS. 10(a) and 10(b). Similarly, FIG. 12(c) has not been amended to switch "LUTB" and "LUTA," since "LUTB" and "LUTA" as shown in FIG. 12(c) accurately correspond to "LUTB" and "LUTA" as shown in renumbered FIGS. 10(a) and 10(b).

Submitted herewith are corrected sheets of formal drawing which incorporate the amendments to FIGS. 10(a), 10(b), 10(c) and 11, and annotated sheets showing the changes made thereto.

No new matter has been added, and it is respectfully requested that the Examiner's objection to the drawings be withdrawn.

THE CLAIMS

Claim 1 has been amended to clarify the feature of the present invention whereby the variation amount represents a

difference value between the source data and the processed image data.

In addition, claim 7 has been amended to be rewritten in independent form to include the subject matter of (now canceled) claims 5 and 6, from which claim 7 formerly depended.

Still further, claim 12 has been amended to be rewritten in independent form, to include the subject matter of (now canceled) claims 10 and 11, from which claim 12 formerly depended.

Yet still further, claim 14 has been amended to clarify that when the signal-smoothening processing is applied to the second source image data, it is based on the second threshold value and the expanded radius.

In addition, claims 1-4, 7, 9, 12 and 14-18 have also been amended to correct various minor informalities of which the undersigned has become aware, including the informalities pointed out by the Examiner, so as to put the claims in better form for issuance in a U.S. patent.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered.

It is respectfully submitted, moreover, that amended claims 1-4, 7, 9, 12 and 14-18 all fully comply with the requirements of 35 USC 112, and it is respectfully requested that the rejection thereunder be withdrawn.

THE PRIOR ART REJECTION

Claims 1, 2, 4-18, 21 and 22 were rejected under 35 USC 102 or under 35 USC 103 as being anticipated by or obvious in view of various ones and combinations of USP 5,585,859 ("Ward et al"), USP 6,765,587 ("Zhang et al"), USP 5,561,724 ("Kido et al"), USP 6,611,618 ("Peli"), USP 5,196,935 ("Cremonesi et al"), USP 6,631,216 ("Hieda et al"), USP 5,774,601 ("Mahmoodi"), USP 6,792,128 ("Nguyen"), and USP 5,838,833 ("Ishikawa et al"), USP 5,628,321 ("Scheib et al"), USP 5,361,105 ("Iu"), USP 5,526,119 ("Bilt et al"), USP 6,614,944 ("Levantovsky"), USP 5,268,751 ("Geiger"), JP 63-178674 ("Ukita"), USP 5,523,802 ("Sugihara et al"), USP 6,594,400 ("Kim") and JP 63-285669 ("Kahara"). These rejections, however, are respectfully traversed with respect to the claims as amended hereinabove.

According to the present invention as recited in amended independent claim 1, an image-processing method is provided for creating processed image data from source image data via an image-conversion processing including at least one spacial-filtering processing. The method comprises: (i) setting at least one predetermined upper-limit value for a variation amount indicating an amount of difference between the source image data and the processed image data; and then (ii) performing the image-conversion processing to convert the source image data into the processed image data by applying the at least one

spatial-filtering processing to the source image data within a range of the variation amount limited by the predetermined upper-limit value.

On page 2 of the Office Action, the Examiner asserts that threshold value $V_{(T)}$ of Ward et al corresponds to the upper-limit value recited in claim 1, and that the difference $V_{(max)} - V_{(min)}$ corresponds to the variation amount recited in claim 1.

It is respectfully pointed out, however, that $V_{(max)}$ and $V_{(min)}$ of Ward et al correspond to maximum and minimum intensity values of pixels in a row used to process a pixel (i,j) in the row. According to Ward et al, if $V_{(max)} - V_{(min)}$ is greater than $V_{(T)}$, then no change is made to the intensity of pixel (i,j), and if $V_{(max)} - V_{(min)}$ is less than $V_{(T)}$, then the intensity of pixel (i,j) is set to be a weighted average intensity of the pixels in the block. Thus, it is respectfully submitted that according to Ward et al the difference $V_{(max)} - V_{(min)}$ merely represents the variation in intensity in a row of, for example, 3, 5 or 7 pixels in image data before processing the pixel (i,j).

By contrast, as recited in amended independent claim 1, the variation amount indicates an amount of difference between the source image data and the processed image data. And it is respectfully submitted that Ward et al clearly does not disclose, teach or suggest this feature of the present invention as recited in amended independent claim 1.

With respect to amended independent claim 7, moreover, the Examiner asserts on page 12 of the Office Action that the combination of Mahmoodi and Hieda et al discloses using look-up tables to find interpolating coefficients.

According to the present invention as recited in (clarified) amended independent claim 7, however, a new look-up table is created by performing a weighted averaging operation with the look-up tables in accordance with the magnification factor, and the at least one spatial-interpolation processing method that is performed in accordance with the magnification factor is performed by employing the new look-up table. And it is respectfully submitted that Mahmoodi and Hieda et al, taken singly, or in combination, do not at all disclose, teach or suggest creating a new look-up table, as recited in amended independent claim 7.

With respect to amended independent claim 9, on page 13 of the Office Action the Examiner asserts that Nguyen discloses both the first and second the size-varying processing and angle-rotating processing of the present invention at column 15, lines 4-10 and 22-27 thereof.

It is respectfully pointed out, however, that column 15, lines 4-10 of Nguyen merely describe identifying a transformation factor k and angle of rotation θ applied to an original image I. And it is respectfully pointed out that column 15, lines 22-27 of

Nguyen describe applying an inverse transformation factor k' (k' = 1/k) and inverse angle of rotation θ' (θ' = 1/θ) to image J. According to Nguyen, the points of interest used for "water marking" the digital image data can be defined even if rotational processing, etc., is applied thereto.

It is respectfully submitted that this feature of Nguyen does not at all correspond to the features of the present invention recited in claim 9 whereby: (i) a first size-varying processing is performed to vary the size of an image to a predetermined intermediate size, and (ii) a first angle-rotating processing is performed to rotate the image by a predetermined first angle value are performed; whereby spatial-filtering processing is applied to image data processed by the size-varying processing and the angle-rotating processing; and whereby (i) second size-varying processing is performed to further vary the size of the image to a predetermined objective size, and (ii) second angle-rotating processing is performed to reversely rotate image by a second angle value, with the second angle value being opposite the first angle value.

With respect to amended independent claim 12 moreover, the Examiner asserts that Scheib et al discloses "establishing a new threshold value" by adding a value to the minimum differential value.

It is respectfully submitted, however, that according to Scheib et al, a minimum average is determined, and 6 dB is added to the minimum average to generate a threshold. Then according to Scheib et al, the peak velocities above the threshold are identified. That is, according to Scheib et al values below the threshold are not processed.

By contrast, according to the present invention as recited in amended independent claim 12, a specific couple of pixels having a minimum differential value is extracted out of the plurality of couples of pixels for processing the objective pixel, and then the new threshold value is established, and all of the couples of pixels having differential values lower than the new threshold value are extracted so that an average value of the extracted couples of pixels is set as a value of the objective pixel.

That is, according to the present invention recited in claim 12, a pixel couple having the smallest differential with respect to the objective pixel is extracted first, and then the new threshold value is established to extract one or more additional pixel couples having differential values lower than the new threshold, for approximating the objective pixel.

It is respectfully submitted that the feature of Scheib et al cited by the Examiner, whereby values lower than the threshold are irrelevant to the processing, is completely different from

the feature of the present invention recited in claim 12 whereby pixel couples having values lower than the new threshold are used for processing. And it is respectfully submitted, therefore, that one of ordinary skill in the art would have had no motivation to modify Kido et al and Ward et al as suggested by the Examiner, based on Scheib et al, to achieve the features of the present invention as recited in claim 12.

With respect to amended independent claim 14, moreover, it is respectfully submitted that none of Bilt, Ward et al or Iu disclose, teach or suggest applying (again) the signal-smoothening processing to the second source image data based on the second threshold value and the expanded radius.

With respect to amended independent claim 16, moreover, the Examiner asserts that Geiger et al and Ukita respectively disclose the second spatial-filtering processing and first spatial-filtering processing recited in claim 16.

It is respectfully pointed out, however, that Geiger et al and Ukita disclose extracting image signals within a particular spatial frequency band from an image. As a result, it is respectfully submitted that according to Geiger et al the image data resides in a plurality of image signal sets in a plurality of frequency bands.

By contrast, according to the present invention as recited in amended independent claim 16, the image-processing method is

provided for processing source image data including a plurality of color components to convert the source image data into processed image data. Thus, according to the present invention as recited in amended independent claim 16, the image data always resides within a single set of image signals.

And it is respectfully submitted, therefore, that the extraction processing disclosed by Geiger et al and Ukita does not at all correspond to the conversion processing recited in amended independent claim 16.

In view of the foregoing, it is respectfully submitted that each of amended independent claims 1, 7, 9, 12, 14 and 16, as well as each of amended claims 2-4, 15, 17 and 18 respectively depending therefrom, along with allowed claims 19, 20 and 23, all patentably distinguish over all of the cited references, taken singly or in any combination, under 35 USC 102 as well as under 35 USC 103.

RE: SUPPLEMENTAL DECLARATION

A supplemental declaration will be submitted in due course, as required by the Examiner.

* *

Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

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encs.

Amendments to the Drawings:

FIG. 10 has been renumbered as FIG. 11, and FIGS. 11(a), 11(b) and 11(c) have been renumbered as FIGS. 10(a), 10(b) and 10(c).

Attachment: Annotated Sheet Showing Changes

Replacement Sheet

FIG. 9 (a)

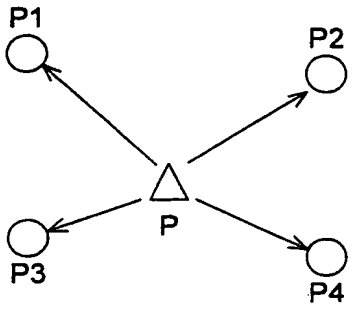

FIG. 9 (b)

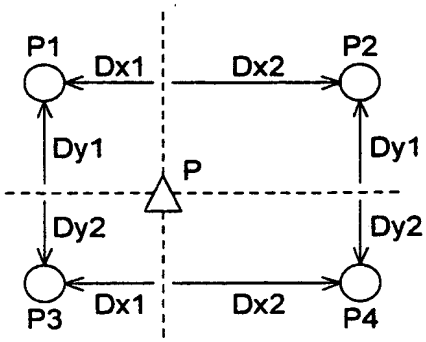

FIG. ~~10~~ 11

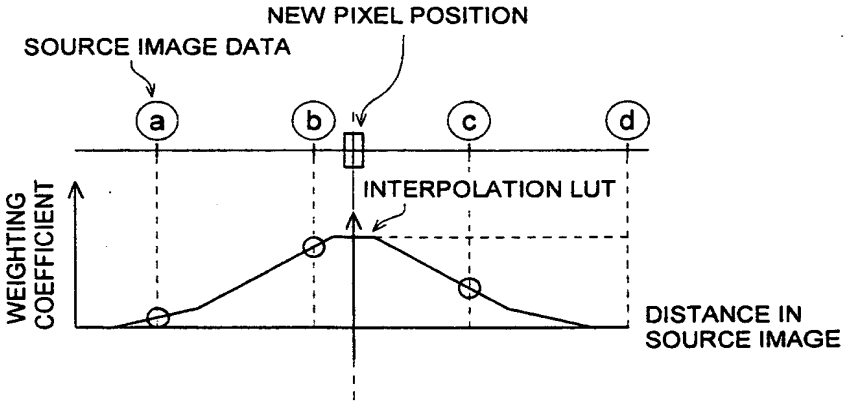

FIG. ~~11~~ 10 (a)

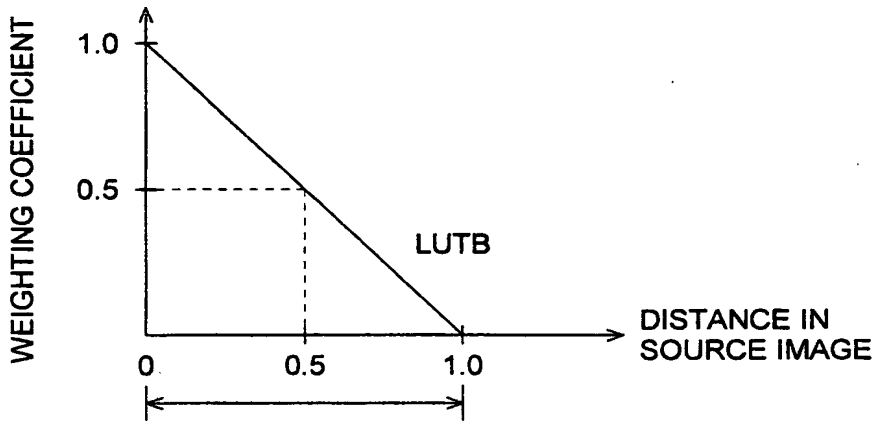

FIG. ~~11~~ 10 (b)

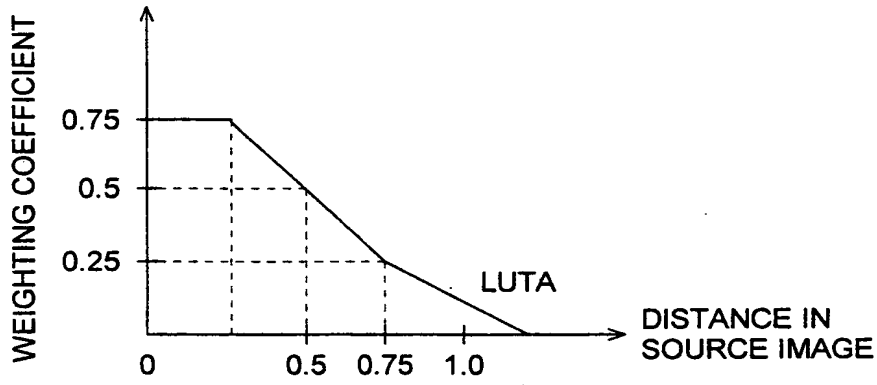

FIG. ~~11~~ 10 (c)